

CLASS OF '81 - These young people are Sandia's newest apprentices who, for the next five years, will pursue study and on-the-job training until graduation in one of three fields - electronics, machine shop, and materials processing. Standing, Steve Bernard, Gil Lucero, Fred Hooper, Joe Padilla and Jim Nelson.

Below, John Rice, Laurel Bahe, Ken Ystesund, Carla Quintana, Wanda Orear, Dave Sparks, Joe Kubas, Gene Gallegos, and Carl Brezowski. The smiling recliner is Brett Bredeaux.

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# Projection: 8 to 10 New Phase 3's By FY 82 

Authorization of engineering development (Phase 3) for eight to ten new weapon programs is anticipated through fiscal year 1982 in the recently published Sandia Laboratories Long-Range Plan. Eight Phase 3 programs and one advanced development program (Pershing II) are now active. Work in these and other weapon areas (military application) is projected to involve some $70 \%$ of the Labs' work force during the five year period.

These Phase 3's are anticipated: Pershing II earth-penetrator and airburst/surface burst warheads; standard missile (SM-2) warhead; HARPOON missile warhead; 155 mm artillery projectile (AFAP);
and a warhead for the M-X (Air Force ICBM). A warhead for Trident II D5, a minimum residual radiation (MRR) tactical bomb, the B57 depth bomb/ASROC follow-on, and a low radiation SUBROC are other probable Phase 3 starts in FY 80 to 82 .

The thrust of upcoming weapon technology is to improve theater nuclear weapon effectiveness against mobile targets and to enhance the survivability and security of weapons deployed outside the country. For strategic weapons, emphasis will be placed on improved accuracy and reduced vulnerability to terminal defenses. Advanced concepts and technologies re-
lating to nuclear weapons will continue to be explored.

Existing and new Phase 3's are likely to bring increased weapon production, and the Labs will devote major resources to production and surveillance activities. In fiscal 77 more than a thousand Sandians will work in this area. Another major effort lies in vulnerability studies of missile warheads. Data from underground nuclear tests and from test facilities in which nuclear effects are simulated will be the basis of these vulnerability studies. A corollary to this work is the continuing development of instrumentation to detect
[Continued on Page Two]

## Afterthoughts

Now it can be told--We didn't want to influence the national election, so we sat on a presidential endorsement that came across our desk from an outfit called the "New Mexico Conservationists for CarterMondale." The group's ultimate accolade: "By the way, Jimmy Carter can eskimo roll his kayak in white water--." I'll believe it only when I see and hear it done to the strains of Hail to the Chief.

Dubious distinction--Which city is costliest? The military vote for New York and Washington where per diem allowances are now \$50/ day (vs the normal \$35/day). Other high cost cities and the military per diem allowance: Boston-\$49; Chicago-\$43; Los Angeles-\$40; Newark\$42; Philadelphia-\$46; and San Francisco-\$41.

Amen--"Four years ago, a study published in the American Journal of Medicine compared the levels of fitness of US Air Force enlistees to that of Austrian recruits. The findings were numbing. Barely $10 \%$ of the Americans could perform at levels considered to be reasonably demanding while $85 \%$ of the Austrians performed capably at this level. Somehow, we've got to find ways to motivate more young people to become and remain fit throughout adulthood." Bike World, March 1976

## CONTINUED FROM PAGE ONE

## Five Year Plan

nuclear bursts, wherever they may occur.
In fiscal 77, 285 people and more than 12 million dollars will support the Labs' nuclear material Safeguards program. This work, an outgrowth of weapon Safeguards work, is performed in the 1700 directorate. The effort is projected to expand to about 400 people in FY 78, and then decline to some 300 people by FY 82 . These are the major projects contemplated over the next five years: Safeguards systems for nuclear fuel cycle facilities (e.g. LWR and LMFBR); development of improved methods to evaluate Safeguards systems; study and characterization of threats relating to theft of nuclear material or sabotage of nuclear facilities; Safeguards systems for research reactors, reprocessing
and fuel fabrication facilities, plutonium storage areas, waste isolation plants and for nuclear material transportation equipment; and Safeguards technology exchanges with the international nuclear community.

Particle-beam fusion is also listed under national security projects in the LongRange Plan because certain effects occurring in fusion facilities closely resemble those of nuclear weapons and may thus be applied in studies of nuclear weapon design and vulnerability. More than 200 people and nearly 10 million dollars will be directed to the particle-beam fusion effort in FY 77. These are projected to increase by FY 82 to 300 people and 15 million dollars.

A final article in this series will cover Labs activities during the next five years in the fields of energy, environment and safety, and conservation. Reimbursable programs will also be described.

## Congratulations

Mr. and Mrs. Richard Kromer (1734), a son, Edward Paul, Oct. 30.

## Sympathy

To Helen Agats (9562) on the death of her brother in Pennsylvania.

To Eloy Cota (2141) on the death of his grandmother.

To Gary Derbenwick (2144) on the death of his father in Pennsylvania.

To Fred James (1242) on the death of his father in East Point, Ga., Oct. 25.

To Bruce Wickesberg (1242) on the death of his father in Black Creek, Wisc., Oct. 28.

## Sandia Seismic Sensor System Awarded Patent

Ten years ago one of Sandia's major programs was development of seismic sensors to remotely detect enemy troop movements and truck convoys in Vietnam. Sandia fielded a sensitive and sophisticated sensor which was rugged enough to be dropped from aircraft at supersonic speeds. It imbedded itself into the earth, trailing an antenna camouflaged to resemble plant foliage. When the seismic sensor picked up movement, signals were transmitted to a central command station where hundreds of the units could be monitored. On-board batteries powered the remote units up to 120 days.

Late in the conflict, the Sandia system (with others) became known as "McNamara's Wall" and provided invaluable information to allied forces. In one instance, the seige of Khe Sanh, the Sandia system was credited with the survival of U.S. Marines who held off great numbers of enemy troops. Enemy troop movement around the bastion was accurately reported, and countermeasures were taken before a massive attack could be mounted.

Recently the basic Sandia seismic sensor system was granted a patent. Inventors are Hervey Hawk (1244), Gordon Hawley (4338), John Portlock (2317) and Jim Scheibner (1732). Also instrumental in the development of the system was H.H. "Pat" Patterson, former manager of Information Systems Department, now retired.

Sandia developed the system and directed production of several thousand units. The program was then turned over to the U.S. Army.


BOB CROMPTON, retired Sandia security inspector, displays assortment of fishing poles which show some of his distinctive wrap patterns. Poles meet specific requirements of persons for whom they were made. Whether they want a casting or spinning rod or fly fishing pole, or prefer cork to Krylon handles, or require ultralight tackle, or want to try the new collapsible guides, or need a special grip, Bob can come up with the right combination. Bob began assembling special poles as a hobby about 30 years ago.

## Supervisory Appointment

Patrick Eiker to supervisor of Systems Studies Division III, 8326, effective Nov. 1.

Since joining Sandia/ Livermore in Oct. 1969, Pat's work has been with the Systems Studies organization. He has contributed to studies on the effectiveness of various warheads
 that might be employed in site defense. In addition, his work has been concerned with secure transportation for special nuclear materials, solar heating and cooling of commercial residential buildings, and how

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solar electric plants might fit into a utility network.

Pat came to the Labs after receiving a BS in math from Regis College in Denver, an MS in applied math from the University of Colorado, and a PhD in mathematical statistics from Colorado State University.

Off the job he enjoys skiing and gardening and is a history buff who specializes on Hawaii. Pat and his wife Mary Ann reside on Easy Street in Alamo.

## LEAP Campaign Tops Goal

Final results show that Sandians responded to this year's LEAP campaign by contributing a total of $\$ 52,933$, nearly 6 percent over the $\$ 50,000$ goal. This represents a $14 \%$ increase over last year.

Average gift per contributor was $\$ 64.32$, up from $\$ 61.76$ last year, with employee participation at 84.4 percent. Of those participating, 145 gave a LEAP Share versus 123 last year and 33 gave a Fair Share.


Carl and Vera Beckham, Leo and LaVerne Adams


Les Rowe, VP Tom Cook (8000)

Dan Dewhirst, Hellmuth Woidtke who has attended the most SLL retiree events


Ray Shephard, Jerry Jones


Bob Neighbors, retiree who came the farthest distance, 820 miles from Westport, Wash.; Jim Lenz, Jerry Ward


Ferne Graves


Ruth Flanagan, Bill Jamieson, Vince Peterson


## MOTHER LODE

## Labs Division Turns Nice Profit

Sandia's precious metals recovery program conducted by Reclamation Division 3413 under Jack Rex returned a net savings of $\$ 138,200$ to the Labs last year. Russ Leahy is responsible for the program.
"We benefited from rising prices," Russ says. "Market price of gold fluctuates between $\$ 110$ and $\$ 150$ per troy ounce and the going price for silver is $\$ 4.26$ per troy ounce."

Most of the gold is recovered from plated electronic parts, wiping rags, printed circuit boards, plating solutions, fiber filters, pastes, inks, plate stock, wire and the like.

One of the primary sources for silver is discarded photographic film and processing solutions. The film is burned in an incinerator to reduce it to ash - about 100 lbs. of film yields 35 troy ounces of silver. The furnace used for the process cost $\$ 6700$ when it was installed in 1968, and since then some $\$ 75,000$ worth of silver has been recovered. At first, smoke from the incinerator was causing environmental problems, but installation of scrubbers in the stack has ameliorated this problem.
Other sources of scrap silver include electronic parts, paste, paint, bar stock and wire.
Platinum, palladium, rhodium and


RUSS LEAHY (3413), responsible for the Labs' precious metals program, keeps tab on the fluctuating price of gold.
iridium are also salvaged in the previous metals recovery program.

The recovered metal is sold to commercial refiners or retained in the ERDA stockpile.

## Fun \& Games

Weight watchers - Break out your pocket calculators. We've run across The Formula to determine your ideal weight if you aree male. It's from a paper given at a meeting of the Aerospace Medical Association by researchers from the USAF School of Aviation Medicine. Here it is: IW = $2.58\left(1.511 \mathrm{H}+0.1845 \mathrm{~B}^{2}-74.58\right)$. IW includes $17 \%$ fat; H is your height in inches; $\mathbf{B}^{2}$ is the square of the circumference of the stressed dominant bicep in inches.

Swimmers - It takes a special breed of mankind to plunge into a swimming pool on a frosty November morning, but if you want to swim before work the Los Altos pool is open for lap swimming from 6:30 to 8 a.m., Monday through Friday. Cost is $\$ 3$ per month.

Singing - Every Tuesday at 7 p.m. the Albuquerque Civic Chorus meets in the Albuquerque High Chorus Room. Sessions are open to all singers.

The 10-5-25 Triathlon - Feeling energetic? A local news release announces the 1st Annual 10-5-25 Triathlon of Albuquerque: 10 miles by bike, 5 miles of running, and .25 miles of swimming ( 8 lengths of an olympic pool), consecutively and without pause. The organizers will pick a date after they've determined the turnout. Call LAB NEWS, 4-1053, if you're interested.

Motorcycling - Some people get their kicks hanging on to a 400 cc trail bike as it bucks and snorts its way over and through
arroyos, narrow trails, fire roads and a few precipices. In the 3rd Annual Great Trail Race sponsored by a group up at Los Alamos last month, five Sandians hung on for 60 miles, taking 1st to 5th place in the Sportsmen class: Tom Petty (2326), Gary Ferguson (1321), Jim Kelsey (1331), Lee Kefauver (5423) and Bill Boyer (5242). Average time to complete the course was over three hours.

Sandia Runners - You may not be aware of it as you huff and puff through your accustomed mileage, but a Univ. of Wisconsin psychiatrist maintains that running may keep you off the analyst's couch. Dr. John Greist says that six of eight patients suffering from depression found relief after taking part in a 10 -week running program, while those in a control group undergoing traditional therapy didn't recover from their depression as well.

Sandia Bicycle Assn. - While Base regulations permit cyclists to treat Stop signs as Yield signs, the same is not true in the Tech Area: Stop signs are for stopping.

City Councilor Marion Cottrell has been working on a bicycle registration ordinance whose principal aim is greater bike security. This laudable aim will be realized, it is hoped, but drafting the right words for the ordinance is a little tricky. LAB NEWS has copies of the proposed words available, and SBA President Terry Stalker hopes to gain opinions from SBA'ers on the ordinance before he attends Councilor Cottrell's meeting on the subject next week, Nov. 17. Call 4-1053 for a copy of the proposed ordinance.

# ECP Campaign Sets New Record 

For the first time, Sandia's ECP (Employee Contribution Plan) pledges and contributions total over half a million dollars $-\$ 516,604$ to be exact. That's an increase of 13 percent over last year's \$455,644.

With nearly all the pledge cards back in, the average contribution per employee is now $\$ 86.36$ compared with last year's $\$ 80.75$. And the number of employees contributing went from 77 percent to 81 percent. Of those, the number of Fair Share (one hour's pay or more per month) givers went over 51 percent.

Says ECP Chairman Jim Kenagy (3640), "Those of us on the committee are of course delighted, and we recognize the tremendous effort that all the solicitors made. But most of all we're gratified at having gotten the ECP message across so effectively - our contributions go a long way in helping make Albuquerque a better place to live. It's a worthwhile investment for all of us."

## Events Calendar

Nov. 12-28 - "TV or Not TV," Barn Dinner Theatre, 281-3338.
Nov. 12-14 - Southwest Arts \& Crafts Festival, Ag. Bldg., Fairgrounds, 10-10 Fri. \& Sat., 10-6 Sun., 60\&.
Nov. 13, 14 - "The Clown Prince," Albuquerque Children's Theater, 1:30 and 3:30, Popejoy Hall, 277-3121.
Nov. 14, 18, 19, 21 - Albuquerque Chaparrals home games, 255-7581.
Nov. 15 - Nitty Gritty Dirt Band, 8:15, Popejoy Hall, 277-7581.
Nov. 16 - "Hidden World of the Big Cypress Swamp," Audubon Wildlife Film Series, 7:30, Popejoy Hall.
Nov. 17 - "A Little Night Music," a musical comedy, Popejoy Hall, 277-3121.
Nov. 18 - John King Fairbank, "Coming Changes in China's World Relations," 8 p.m., UNM Woodward Hall.
Nov. 19, 20 - Concert by the New Mexico Symphony Orchestra with Leon Fleisher (pianist), 8:15, Popejoy Hall.

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## Death

Philip Tollefsrud, simulation project leader for the W76 program, 5230 A , died suddenly Nov. 7. He was 38. He had worked at Sandia since April 1969. Survivors include his widow


## Louise and Bob Miera Work For Future

"It is our policy, consistent with our other equal opportunity and fair employment responsibilities, not to discriminate against any individual on the basis of a physical or mental handicap. . . . Employment decisions involving handicapped employees or applicants will be based on an objective determination of each individual's ability to perform a specific job.

- Morgan Sparks, Sandia Laboratories President

Louise (3733) and Bob Miera (9653) are typical young marrieds. They both work, have many interests, plan to buy their own home soon and look forward to having children in three or four years. Still, they live in a world of total silence. Both are deaf.
Other than minor difficulty in communicating with co-workers, they have no handicap on their jobs at Sandia. Louise is a typist and tele-typewriter operator in Purchasing. Bob is a draftsman operating computerized precision graphics equipment.
They met while attending the National Technical Institute for the Deaf, part of the Rochester Institute of Technology. Opened in 1968, the school is pioneering teaching methods and curriculum for the deaf. Placement of NTID graduates on jobs is 95 percent.
Bill Peay, supervisor of Precision Graphics Division 9653, reports that Bob is a


Louise (3733) and Bob Miera (9653).
highly productive employee. Although communication is by writing, Bob is quick to respond, and he's one of the group.
Dick Burken, supervisor of Contract Typing and Office Services Section 3733-3, is enthusiastic about Louise's work. Louise can read lips and talks well. As she learned in school, she executes sign language simultaneously as she speaks.
Bob is secretary of the Albuquerque Club for the Deaf; Louise is treasurer. It is a social and self-improvement center for its members.

Louise is currently enrolled in three

Sandia self-study courses, and reads auto mechanic repair manuals for recreation. She has performed tuneups and minor repairs on the family's Opel and Camero.

Bob is a member of the Deaf Basketball Club and plays in the City league. He is also an avid collector of DC comic books.

They both enjoy outings to Jemez Springs where Bob's parents own a cabin. And Sandia?
Louise and Bob agree that it's a great place to work.
"Co-workers are very helpful," Louise says.

## How to Get Hooked on History

The New Mexico Genealogical Society recently moved its library to Room 101 of the Shalako Inn on East Central. A Sandian who spends a lot of time there is Bob Graham (5131), editor of The New Mexico Genealogist.
Starting from a casual interest in family history three years ago, Bob has become so engrossed in genealogy that it's practically a second full-time job.
"You get hooked," he says. "History becomes alive in a personal way. Letters written by ancestors describing tragedies of the civil war or the hardships encountered migrating west make these events very real - even wills listing the mundane property divided among the living give insight into the way people lived.
"There's a little Sherlock Holmes in everybody. You find excitement in a new clue which documents your family in a particular place and time. It usually links

BOB GRAHAM (5131) is editor of The New Mexico Genealogist

one person to another and opens up a new branch to research."

Bob's interest started at a family reunion when a cousin produced some old court records concerning their great grandfather.
"He became a person," Bob says, "and an intriguing one. I decided to learn more."

That's where the Genealogical Society can help. People who have been there before know the ins and outs of record
searching, the special source books, how to locate census records and how to find wills, births and deaths information in public records.

Bob has traced his Graham family back five generations to his third great-grandfather Abner who settled in Missouri in 1819. He has made a special effort to document the descendants of Abner's son Hiram and has located more than 750. The letter writing involved has made him a proficient typist.

In the search, Bob has collected hundreds of old letters and copies of documents. Prize of the collection is a photograph of his great great-grandfather and grandmother taken about 1840.
"I know these people," he says, "even though they've been dead more than a 100 years."

Bob is currently writing a volume on his family history, and he's planning a trip to Missouri and Tennessee to find Hiram's roots. He has a couple of leads.
"Genealogy is a great hobby," Bob says, "attracting great numbers of people nationwide. If anyone is interested, the local Society will help. Call 298-6861, ext. 101 , or visit the new library."


WHEN one of its artillery shells exhibited erratic flight behavior, the Army asked for Sandia's assistance in analyzing this ballistics problem. Enter Hal Vaughn, head of Sandia's Aeroballistics Division 1331, and the story proceeds to a happy ending: the shell now behaves itself and Hal is recipient of the Army's Outstanding Civilian Service Medal. Bill Hartman (1282) at right provided structural analysis assistance. President Sparks presented the citation which reads, in part, "Through incisive analysis and personal dedication, he achieved conspicuous success in defining, solving, and experimentally verifying the complex equations of motion of cargo-carrying projectiles."

## Take Note

Russell Smith (3162) reports that FCC amateur license exams will be held here at Sandia on Jan. 15 at 8 a.m. in Bldg. 815. Classifications to be examined include technician, general, advanced and extra. Contact Bob Foster, 4-8992, before Dec. 6 if you are interested.

At the Nov. 17 meeting of ASME, APS's Ralph Dixon will talk on "Teaching, Tests, and Tribulations." Preceding the 8 p.m. talk there will be a social hour at 6 and dinner at 7. Place: 4-Seasons. Reservations: by Nov. 15, Don Cox on $4-6753$ or Fred Norwood on 4-3973.
"Consumer Education in Indian Arts and Crafts" is the subject of a weekend program at the Indian Pueblo Cultural Center, Nov. 20 and 21. The event is hosted by the Center in conjunction with the New Mexico Attorney General's Office and the state's Division of Consumer Protection. The program will feature exhibits and crafts demonstrations by a weaver, potter, silversmith and lapidary. A special display, compiled by the Indian Arts and Crafts Association, will show the differences between Indian and non-Indian work.

Joe Tillerson (5162) will present "Structural Analyses for a Waste Isolation Pilot Plant" at the 5100 Seminar Nov. 16. On Nov. 23, Richard Kiehl (5133) will discuss
"Effects of Optical Carrier Generation on TRAPATT Oscillators." Both meetings will be held in Rm. 201, Bldg. 806 at 3:15 p.m.

"In recognition of Officer Ronald Marler as the outstanding cadet of the Albuquerque Police Academy"; so reads the award presented to Officer Marler by the Albuquerque Society of Manufacturing Engineers. Accompanying the award was this Smith \& Wesson . 357 Magnum revolver which ASME member Larry Snodgrass (1221, at right) had modified for improved performance. Presentation was made at Police Academy's graduation ceremonies. At left, Lt. B.E. Griffen and Chief Bob Stover.

On this day 422 years ago, Don Francisco Vásquez de Coronado died in Mexico City. Although his 1540-42 expedition into the Southwest and Midwest resulted in the discovery of far fewer riches than are today exhibited in the shopping center that bears his name, he was a hero. For Coronado did as much as any explorer to acquaint the world with the interior of what is now the United States.

He was a hero, but he


THE RICHES that eluded Coronado all his life now surround his replica in a local shopping center.
died at 44 a broken and embittered man. His bad luck held to the end.

True, he had the only golden armor in the expedition, thanks to a rich marriage to beautiful Doña Beatriz de Estrada, and he was the expedition's leader, thanks to his friendship with Mendoza, the first viceroy of New Spain (now Mexico). It was the two (or three) of them who financed the 336 -man (plus wives, Indians, and herds of animals) quasi-army. The 110,000 ducats (about $\$ 2$ million today) they put into the venture would, they were sure, make them truly rich, even after the Spanish crown took its share and after each of the soldiers was generously recompensed. For they were to extend the blessings of Spanish citizenship to the inhabitants of the fabulously wealthy seven cities of Cibola - and these lucky people would certainly wish (or could be persuaded to wish) to show their gratitude by sharing their gold with their new sovereign and his emissaries in armor.

That Cibola was wealthy there was no doubt. Had not Estevan, black survivor of Cabeza de Vaca's party, sent word to Friar Marcos in Coronado's advance party that Cibola was "greater and better than New Spain"? And had not Friar Marcos himself reported that the only one of the seven cities he had seen (albeit from a very safe distance) was "larger than the City of Mexico [and was located in] a land rich in gold, silver, and other wealth"?

So off went the caravan on February 23, 1540, fording the streams, climbing the mountains, crossing the deserts, abandoning the impedimenta usually borne by the proper Spanish soldier. A foraging party was ambushed by theoretically pacified Indians. Only one Spaniard was killed, but he was an important officer. Coronado authorized the ultimate pacification of all the Indians in the vicinity - death by hanging.

The city described in such glowing terms by Friar Marcos, who was apparently one of the great visionaries of all time, was discovered July 7, 1540. We know it as Zuni pueblo. Massive disappointment or no, Coronado carried out two of his orders: 1. Persuade the natives to acknowledge Spanish authority, and 2. Extend to them the benefits of organized religion. Given
the poverty of the place ("a few tattered blankets and some turquoises"), Coronado did not take the normal third step collect back taxes.

The Indians were not as impressed as Coronado would have wished at the news that they were now to be defended from their enemies by the Spanish crown. In fact, they drew a line and requested that the Spanish remain on its far side. Such action did not strike the Spanish as demonstrating the fealty due a reigning monarch, however obscure the process of citizenship acquisition. So they crossed the line. Arrows flew.

This was armed rebellion, punishable in kind. Out came the swords and on came the charge. The Indians who were not slain ( 12 to 20 were) secluded themselves in the pueblo, drawing up all the access ladders behind them.

Save one. Coronado led his men up it amidst a hail of rocks, arrows, and small boulders. With his gilded armor, he was a splendid target. Shortly thereafter, he was unconscious. But the battle was over quickly. The Zunis surrendered, then were allowed to flee. They left behind food enough that one Spaniard wrote home "we found there something we prized more than gold or silver; namely, plentiful maize and beans, turkeys . . . and salt better and whiter than any I have ever seen."

Coronado's letter to Mendoza was less euphoric: "I can assure you that he [Friar Marcos] has not told the truth in a single thing he said, for everything is the very opposite of what he related."

But Coronado pushed on - he had more pacifying to do. And who knew? Perhaps gold would be discovered in some "kingdom" (as the Spanish insisted on calling each Indian settlement) further east. Their journey was hastened by tales of buffalo. Buffalo had been mentioned by de Vaca in the same breath as gold, emeralds, populous cities, and fertile valleys. Perhaps he was right after all.

Bearer of the tales was one Bigotes (Mustaches) who said he lived in what is now the Pecos pueblo ruin. One of Coronado's captains saw Bigotes to his home and returned with two Indian captives, El Turco (because he looked like one) and Isopete. These two were from the Midwest, and they were able to lead the

Spanish to buffalo - which they immediately began slaughtering.

Then El Turco embarked upon the first , of several lies. When it came to flights of fancy, he was an ace pilot. His goal was to get back home. His method was to lure the Spanish to escort him there. His means was to mention gold - often, and in the most intriguing of ways: ships with sails and 20 oarsmen and decorated with golden eagles, golden table service, and even golden bells whose tinkle lulled the lord of the kingdom of Quivira to sleep. El Turco was not one to let a mere trifle like truth impede his swift flight home.

But the weather did. The little detachment headed west rather than east and met Coronado and the main force at Tigeux (near present Bernalillo). Needless to say, El Turco found Coronado a most cordial host. Most of the pueblos along the Rio Grande had been intimidated (primarily by burning 30 Arenal Indians at the stake as punishment for horse stealing). So when Coronado asked to quarter his men for the winter in one of the dozen Tigeux pueblos, its inhabitants moved out with unsurprising alacrity.

Came the spring (April 23, 1541, to be exact) and Coronado and his entire band - over 1500 with soldiers and Indians and their herds marched east. All were properly impressed by the immense buffalo herds on the Staked Plains.

But what really impressed them most was Isopete throwing himself on the ground, swearing that he would rather have his head cut off than to continue with El Turco as guide, that Quivira was a village of grass huts, that even base metals, much less gold, were unknown in the area. Coronado was convinced enough that he sent all but 30 or 40 soldiers back to Tiguex, manacled El Turco, and set off to get the Quivira matter settled once and for all.
Somewhere in Kansas, perhaps near the present Lyons or Great Bend, he found Quivira. And his worst fears were once again realized - Isopete was right. El Turco was garroted on the spot (the spot between chin and chest). Coronado went a few more miles, probably turning back after a look around from atop Coronado Heights (though it wan't called that then) near Lindsborg. His heart just wasn't in it anymore, so the little band released Isopete and headed back to Tigeux for the winter.

One final bit of bad luck for Coronado (in New Mexico, at least) - while horseracing on Dec. 27, 1541, his saddle girth broke, and he fell in front of his competitor's horse. Hoof met head, and from then on he was a sick man physically as well as mentally.
But he led his party back to Mexico in 1542. His luck held even there - after completing voluminous reports, he was brought to trial for committing "great cruelties upon the natives," gambling (what Spanish gentleman didn't?), and misuse of government funds - the strangest charge of all in view of the origin of the expedition's funding. He was exonerated, but he was a broken man for the rest of his life. ${ }^{\bullet} \mathrm{bh}$

## MILEPOSTS <br> LAB NEWS NOVEMBER 1976



Jim Mitchell - 3161



Larry Borello - 8432


Helen McKenzie - 341120


Mickey Rindone - 834425



William Rowe - 9533


Charles Burbank-3714 20


Rachel Jackson - $5100 \quad 15$


James Reed - 3645


Robert Shuman - 934120



Robert Jones - 9341


Marvin Causey - 128220


John Phelan-1321


Jack Burt - 9622


Don Stuart - 5112


Charles Joerg - $2531 \quad 10$


Keith Brower - $5112 \quad 10$



Charles Wimmer - 965220


Beno Baerwald - 342125


George Nuanez - 975310


Thomas Chiado - 343225


Abelio Garcia - 3421


Dave Havlik - 8332


Jose Garcia - 2632


Don Gorsline - 1242


Tom Devlin-8252


Pat O'Brion


Gene Lopp - 8431


George Garcia - 4311 20


Terry Leighley -9412


Herman Stein - 511220


Peggy Burrell - 4256




Bob Kelly - 4211
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Darrell Munson - 5163
A.C. Watts (1322), "Instrumentation for BalloonBorne Gamma Ray Astronomy Experiment," AFGL Scientific Balloon Symposium, Oct. 20-22, Portsmouth N.H
P.H. Holloway (5825), "Quantitative Auger Analysis of Binary Alloys," Solid State Physics Seminar, Stanford University, Oct. 21
D.H. Jensen (2355), "Analytical Modeling of the Prompt Fission Neutron Uranium Logging Technique" H.M. Bivens, et al (2355), "Pulsed Neutron Uranium Borehole Logging Using Prompt Fission Neutrons"; L.C Bartel (5732), "Model Calculations of the Potential Gradients Used In Massive Hydraulic Fracture Mapping and Characterization," International Meeting of the Society of Exploration Geophysicists, Oct. 23-28, Houston, Texas.
E.P. EerNisse (5133), invited talk, "Use of Ion Implantation in Radiation Damage Studies"; H.M. Bivens, G.W. Smith and D.H. Jensen (all 2355), invited
talk, "Pulsed Neutron Uranium Borehole Logging"; R.S Blewer (2353), "Applications of Ion Beams to Metals," Fourth Conference on Application of Small Accelerators, Oct. 25-27, Denton, Texas.
J.R. Woodworth (5216), "Opportunities in Physics for a Denison Graduate," informal talk at Denison University, Oct. 26, Columbus, Ohio

## Speakers

G.J. Kominiak, R.R. Sowell and D.M. Mattox (all 5834), "The Cleaning of Substrates for Vacuum Coating," Integrated Contractors meeting on Coatings and JOWOG 12A Coating Meeting, Oct. 26-29, SLL
D.W. Schaefer (5814), "Structure and Dynamics on Ordered Suspensions of Macromolecules," Departmenta Seminars: Univ. of Virginia, Univ, of Penn., GE
(Schenectady) and Kodak (Rochester), Sept. 27-29.
E.L. Burgess (5133), "Solar Cell Systems Using Concentrated Sunlight," invited talk at EE Seminar for faculty and graduate students, Oct. 29, University of Arkansas.
R.C. Hughes (5814), "Excess Electron and Hole Transport in $\mathrm{SiO}_{2}$," Applied Physics and Electrical Engineering Department, Stanford University, Oct. 19.
N.J. DeLollis (5813), "Metrication and Standards," freshman engineering class, UNM, Oct. 7.
J.M. Hueter (4231), "Creativity in Engineering,' American Society of Civil Engineers, Sept. 15; engineer ing freshmen, UNM, Sept. 17; and American Society of Civil Engineers, student chapter UNM, Oct. 12; "Creative Problem-Solving Workshop," U.S. Customs Service, Los Angeles, Sept. 22; and U.S. Customs Service, Nogales, Ariz., Oct. 7.
R.J. Eagan (5846), "Glass Ceramics Review," JOWOG 5 meeting, Oct. 4-13, Aldermaston, England.


## MISCELLANEOUS

BUMPER POOL table, balls, cues, $\$ 30$; ladies' hair dryer, \$5. Lohkamp, 298-6494.
STEEL BELTED RADIAL tires, used, 165X13, about 20,000 miles left, \$25. Gorney, 898-2667.
STAMP COLLECTION, all US mint, 4 white Ace albums, best offer. Kramer, 898-7149. ELJER BATHROOM SINK, commode, white, new; outside door, window, 32"x6'7", \$10; Sears bicycles, boys' 5 -spd. $\$ 35$; girls' 1 -spd., $\$ 25$ Kurowski, 881-1859.
GAS TANKS, fit Ford pickups, 2 ea., $\$ 20$; bench seat from Dodge van, $\$ 75$. Zucus kie, 881-4086.
GARAGE DOORS, 2 ea., $9^{\prime} \times 7^{\prime}$, solid, single pivot with hardware. Muzzey, 268-0914.
SNOW TIRES, 2 ea., E-78-14 white walls, used only one weekend. Guest, 821-8622.
4" ROCKWELL JOINTER, $1 / 3$-hp motor, $\$ 100$; steel casement window, $38^{\prime \prime} \times 38^{\prime \prime}, 6$ lite, $\$ 8$. Denish, 256-1559
SHOP MANUAL for '65 Mustang, Comet, Fairlane, Falcon, $\$ 3$; trailer hitch for ' 65 Fairlane wagon, might fit others, $\$ 15$. Riggins, 299-7778.
TRAMPOLINE, $6^{\prime} \times 12^{\prime} \mathrm{mat}, \$ 350$; enclosed $6^{\prime} \times 4^{\prime}$ car top carrier, \$15. Oberst, 299-1224.
DANISH MODERN COUCH, chair, recliner, ottoman, lamps. Rea, 299-9315.
POLAROID LAND CAMERA model $340, \$ 35$; waffle iron and grill, \$5. Dieter, 255-8056.
COLOR TV, Magnavox $25^{\prime \prime}$ console, \$195. Dalesandro, 881-4741.
LOBO BASKETBALL season tickets, at cost, $\$ 50$. Sullivan, 298-0148.
SNOW TIRES for VW campmobile, $2 / \$ 27.50$. Marcrum, 255-3123.
IRONS, Spalding Executive,

1970 pro, 2-9, PW, medium flex, D-2 swing weight, \$45; wood exterior screen door, $801 / 2 \times 353 / 4$, $\$ 8$. Trump, 299-5162.
ROYAL ELECTRIC TYPEWRITER, \$70; size 12 boys' clothes; children's books, $\$ 1$ and up: ski acc. Porfer, 298-3623.
DINING ROOM SET, solid walnut, contemporary style, $40^{\prime \prime} \times 60^{\prime \prime}$ table, leaf, hutch, 6 chairs, \$200. Schindwolf, 897-0470.
TYPEWRITER, Smith- Corona, portable electric, Elite type, 12" carriage, \$165. Bair, 296-3505.
ROYAL FUTURA PORTABLE typewriter, elite, \$50. Young, 292-1266.
CHESTS, 2 \& 4 dwr, \$50; 5 dwr $\$ 25$; table $\$ 45$; end table, \$20; Mark 10 CDU, \$15. Rack, 296-2922.
2 RIMS and 1 snow tire for ' 70 Jeep Wagoneer; unicycle. Wolf, 298-4746
FIGURE ICE SKATES, Riedell, size $41 / 2$, ladies' guards, $\$ 25$; 147 ' of $11 / 4^{\prime \prime}$ gal. pipe; 7 ea. Norelco mod. 84 recorder/ transcribers. Wright, 281-5828.
8MM KEYSTONE movie camera, \$25; kingsize bedspread; $5^{\prime} \times 7^{\prime}$ area rug; plaid drapes, $96^{\prime \prime} \times 60^{\prime \prime} ; \mathrm{CO}_{2}$ handgun; ski boots, $8 \frac{1 / 2}{2}$. Chandler, 296-3323.
ELECTRIC RANGE, Frigidaire built-in, large oven and 4 surface units, make offer. Fienning, 298-0743.
PLAY DINETTE, stove, sink, \$12; Magnus organ, \$4; snowing, $\$ 2$; big wheel, $\$ 3$; small pool table, \$5; Lite Brite, \$2. Brown, 296-9009. SWIVEL ROCKER, early American, \$25. Brown, 296-1121. RECLINER, dark green, \$25; gold swivel chair, \$25; Kohler wash basin, \$20. Benedict, 869-2949.
CAMP TRAILER, 13 ft . Cardinal, bought new last May, used once. Collier, 265-6873.
OAK RACK for long pickup, $\$ 45$; Oriental iron gate, $\$ 25$; student desk, \$20; cedar chest, $\$ 35$. Sublett, 298-1004. DISHWASHER, Lady Kenmore, portable. Reger, 268-9358. OSCILLOSCOPE, Tektronix model 512, \$125; Hewlett Packard square wave.generator, \$20. Allen, 299-9075. SKI BOOTS, Maroon Henke, $61 / 2$ or $7, \$ 15$; black Kastinger, 7 or $71 / 2, \$ 10$. Bassett,

## 898-1840.

WINCH, 12 V., for compact pickup, with cable guide, \$105. Womelsduff, 296-9485. tWELVE STRING GUITAR, Martin D-12-20, hard case. Kass, 265-6036.
CRYSTAL CHANDELIERS, one 8 light, \$45; two 5 light, \$20 ea. Erickson, 296-0486.
BASKETBALL GOAL, roof mounted, backboard, goal, net, \$12; Reynolds clarinet, case, \$75. Randall, 299-3935. BABY ITEMS; movie screen; 2 motorcycle helmets, one small, one medium. Falacy, 881-1802.
CAR TOP CARRIER for '70-76 station wagons, $\$ 50$. Dunn, 298-4185.
LARGE DOGHOUSE, cost $\$ 70$, sell \$30. Arnold, 898-1467 after 5:30.
PORTABLE TYPEWRITER, Olympia, manual, case, \$35; punch bowl set with 24 cups, \$10. Denton, 298-0566.
AUTOMATIC WASHER, Westinghouse, white, $\$ 40$. Keizur, 298-7945.
FREEZER, upright, \$40; portable dishwasher, $\$ 20$. Shaut, 299-8569.
WOODEN DESK, $5^{\prime} \times 33^{\prime \prime}$, sanded for refinishing, glass top, typewriter well, 3 side drawers, \$40; Kenmore washer and dryer, $\$ 50$ ea. Mead, 299-2396.

## TRANSPORTATION

BOYS' BICYCLE, 20" Sting Ray, \$20. Walla, 299-2209 after 5.
KAWASAKI 125cc, $8^{\prime \prime}$ travel front forks, $9^{\prime \prime}$ travel rear wheel, $\$ 350$ or best offer. Miller, 299-6067.
72 PINTO, red, 43,000 miles, radio, mag wheels, $\$ 1000$ or trade for small pickup. Phillips, 881-2450
75 FORD LTD Squire station wagon, PS, power seats, AC, AM/FM, tape deck, under warranty, 10,000 miles, \$5000. Chavez, 877-7241.
BICYCLE, 20", small frame for beginners, converts to boys or girls, solid tires, \$18. Rozelle, 298-0396.
' 75 HONDA CB500T, make offer. Northcutt, 296-4582.
'73 DATSUN 240-Z, silver, black interior, 33,300 miles, 4 spd., stereo tape, front spoiler, $\$ 4100$ or best offer. Chapman, 292-2800.
MAN'S BICYCLE, 10 -spd. Olympian Panworld, $1 / 2$ original price, $\$ 70$; Sears wo-
man's 5 -spd., $\$ 40$. Lewis, 296-7896.
HONDA 90 trail bike, 2700 miles, spare gas tank, knobby tires, luggage rack, \$450. Perryman, 294-7040.
' 70 MONTEGO, 2 dr., HT, AT, PS, AC, \$1295. Hoffheins, 298-0017.
' 74 HONDA 750, 7500 miles, sissy bar, luggage rack, \$1500. Daut, 255-2529.
' 73 VW SUPERBEETLE, 41,000 miles, steel belted radials, \$2000. Baca, 268-0943.
' 72 FORD Mustang, 2 dr . HT, 3 -spd., floor shift, 302 V8, \$2400. Konnick, 266-7113.
MINIBIKE, Penneys Golden Pinto, $31 / 2$-hp, $\$ 60$; bumper rack carrier for minibike, \$10. Lohkamp, 298-6494.
'67 MUSTANG, AT, \$400. Cleveland, 299-7420.
' 73 VEGA GT Hatchback, AC 4 -spd., radial tires, deluxe interior, radio, sport stripes, asking $\$ 1600$. Cleveland, 298-0218.
' 64 SAAB 2 dr . sedan, 83,500 miles, $\$ 450$ or make offer. Lane, 298-3366.
75 MONZA $2+2$ Hatchback, PS, 4 -spd., 4 cyl., yellow with black, white interior, tinted glass, priced below book. Bell, 344-1580.
'71 SUZUKI TC-120, trail plus street gear box, \$200. Brandvold, 296-4394.
'58 FORD Fairlane 500, 2 dr . HT, T-Bird engine, AT, PS, PB, 40,000 miles, best offer over $\$ 800$. Verardo, 255-6385
73 VW. SUPER, air, radio, heater, best offer over \$1950. Scheiber, 298-0904.
68 FORD, Camper Special, 4 -spd., 390 engine, PB, PS, AC, with Aspen camper. Reger, 268-9358.
' 75 PACER, 18,000 miles, vinyl top, new tires, $\$ 2850$. Thompson, 299-0092.
GIRLS' TOURING BIKE, 3 -spd., $26^{\prime \prime}$, needs some work, $\$ 10$. Perino, 268-8197.
' 57 WILLYS WAGON, 4 WD, sell or trade. Lindsay, 299-7454.

## WANTED

USED OSCILLOSCOPE for hobby use. Olson, 293-4984.
STUDENTS for German tutoring, children or adults, trained, experienced, evenings, former Germany resident, inquire for details. Robie, 881-0701.
35MM PHOTO ENLARGER, prefer one that takes 35 mm and

620 negatives. Olson, 898-8909.
PETS to care for while you're on vacation; my home or yours; experienced. Orear, 256-1941.
WINCHESTER 1894 carbine; S\&W or Colt .38 special revolver, pay cash or trade German .32 automatic pistol. Smitha, 881-1001.

## FOR RENT

2 BDR. CONDOMINIUM, Ruidoso, sleeps 6, everything furnished, including daily maid service. Banks, 268-7723.

## REAL ESTATE

MOSSMAN, all brick, 3 bdr., family room, game room, fireplace, hardwood floors, newly carpeted and painted, near Comanche Grade School. Otts, 299-3423.
4 BDR. HOUSE, family room, fireplace, carpeted throughout, sprinklers, 2000+ sq. ft ., Four Hills, \$49,500. Griesel, 294-2736 after Nov. 16.

3 BDR. HOUSE, den, $13 / 4$ baths, Smart Home Concept upgraded, carpet, hardwood cabinets, ceramic tile entry, below appraisal, $\$ 45,760$. Crego, 294-4373.

## LOST \& FOUND

LOST - Bunch of keys in pink case; dark brown military type glove; 2 Plymouth car rings on ring; man's 3 -speed Hercules bicycle, red, basket on front, Sandia decal 18247; gold cross pencil (Sandia award).
FOUND - Bus pass (22 ride); safety glasses, grey lens, "Titmus USA6" with one nose piece missing; Heishi necklace with three little black birds; gold key "Cole National USA"; black leather round collapsible coin purse. LOST

| FRIDAY | SATURDAY |
| :---: | :---: |
| 12- HAPPY HOUR <br> GERMAN BUFFET <br> Adults \$3.25 <br> Under 12 1.92 <br> Tomás \& Marcia <br> THE MELLOTONES | 13-KING CRAB <br> C'tails \& Dinner 6 <br> BONNY ROSE <br> Lobo Bus - 10:15 |
| 19- HAPPY HOUR <br> BBQ RIBS BUFFET <br> Adults \$3.50 <br> Under 12 1.92 <br> Denny <br> BOB BANKS \& TRIO | MIDKNIGHT SPECIAL <br> Mbrs free Guests $\$ 1$ <br> Lobo Bus-6:45 |

MONEY - is what it doesn't take much of to join the Club - only $\$ 2.50$ a month - (cheapest deal in town) and that's pretty painless amongst the other payroll deductions. If you ever eat, drink, or make merry (or travel) (or go to Commonwealth movies), you'll save more than your Club dues every month.

ISN'T - \$3.25 a pretty good deal for sauerbraten, knockwurst, German potato salad, rice pilaf, a bunch of salads, roll, butter, beverage, Tomás and Marcia (6:30 to $8: 30$ ) and The Mellotones? Hint: the answer rhymes with YES. So pack up your troubles and pick up your family (or whomever) and poke on over to tonight's , Happy Hour.

EVERYTHING - about next week's Happy Hour is tried and true. Barbequed spare ribs, corn-on-the-cob, peas, salads. And Denny from 6:30 to 8:30! He's got his innovative new record out - it just lies there; your head spins at 33 rpm . Then we'll welcome Bob Banks and His Trio back to the Club where he'll pull out all the stops and help you pull yours.
$I N$ - just four days you can learn how to take care of all that new ski equipment. Come out for the Ski Repair Clinic on the


16 th at $6: 30$. Then stick around for the social half-hour and the 7:30 meeting. You'll see ski fashions from the racks of the Rocky Mountain Ski Company and hear owner Tom Doak's inciteful comments on each (he'll incite you to go buy them). Then Head's Ken Zimmerman will tell you all about "Choosing the Right Ski For Your Ability." If he has time, he'll tell you about choosing the left ski too.

FACT - of the matter is that another great King Crab Feast is here. But if you don't have tickets already, don't be tomorrow night.

THESE - kids just grow up faster and faster, don't they? Yesterday the Easter Egg Roll, tomorrow a Teen Dance. Well, actually, the Teen Dance with Ghost Rose (new faces, better than ever) isn't till the 27th but pick up tickets early or at the door, parents.

DAYS - of sleeping it off. Nights of getting it on in fabulous Las Vegas. It's a quickie-trip package for $\$ 140$ all-inclusive: Friday the 19th through Sunday the 21st. Hurry!

IT'S - the simplest, cheapest way to see the South American sights, cities, scenery. It's Jim Park's collection of slides. It's at Travelogue Night, 7:30 on the 17th.

HARDLY - any time left to tell you to get tickets for tomorrow afternoon's Lobo Bus to the BYU game; do it today. The bus will depart at 10:15 a.m. And pick up tickets for next week's Arizona game too. After the game, play the Fifth Quarter (when you're not bound by training rules)

HOT FLASH-Lobo Basketball Buses will run to each home game. Fifty cents (\$1 guests) per rider. Pick 'em up early. Orsave $\$ 1$ by buying a "bus season ticket" for $\$ 7.50$; it's good for all 17 games.
and enjoy Cougar Blue Saturdays or Wildcat Whompers. Keep the glasses too - drink to a matched set.

ANYTHING - you want to celebrate at a small group, weeknight Christmas party? There may still be a couple of dates left open - stood up, as it were. Sandi Claus is the one to call; but do it now.

## - SOUTH AMERICA•GHOST ROSE•MARCIA•BOB•HAPPY THANKSGIVING

# fReracol Tiback 

To get a response to your comments and questions about Sandia Labs, complete a Feedback form [available near bulletin boards] and return it to the Feedback administrator. The substance of questions and responses of wide interest is published in LAB NEWS.
Q. Other companies have a "Spouse's Check List"[for the want of a better title] which lists things to be done by the remaining spouse in the event of an employee's death.

This list would detail all the Sandia Lab benefits; all things required of the remaining spouse and the name and phone number, etc., of the Benefits Organization at Albuquerque and Livermore.

Is it possible that something like this can be done at Sandia Labs?
A. At one time such a check list was mailed out, but this was replaced by personal contact by a representative of the Employee Benefits Division.
The list of benefits you refer to is issued annually to all employees as the Employee Benefit Statement and is used by the Sandia counselor when explaining the survivor's benefits to the spouse. A file is established in the name of the deceased in the Benefits Division and maintained until all benefits have been released.
Many organizations offer "what-to-do" check lists of the type you describe. Benefits that require tax or legal attention are, of course, the responsibility of the estate.
C.H. DeSelm - 8200
Q. It seems apparent that there is no standard for reviewing the performance of
clerical employees on a regular basis. Also, discussions between line supervisors and/or secretarial supervisors and the employees seem to be sporadic or non-existent. I would think it would be beneficial to supervision and employees alike if such discussions would take place.
A. Sandia Laboratories does not have an established program of performance appraisal for employees assigned to unionrepresented jobs. Salary treatment for these represented employees is not based on "merit" or performance, but is the result of collective bargaining with automatic salary progression from the start rate to the job rate.

Staff employees are reviewed annually and their salary increases are dependent on their appraisal. The Qualitative Review program ensures that supervisors and staff employees discuss aspects of the job including items such as performance, progress, problems, etc. A Qualitative Review card is signed by the supervisor and employee at the time of the review.

You should feel at liberty to discuss your job and performance matters with your supervision whenever you feel it is desirable. If you think a formalized program of performance reviews for represented employees would be beneficial, you should discuss your thoughts with your union representatives.
R.J. Edelman - 4200

